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SEPARATION OF SEVERAL CELLS OF CELLULOSE FROM HIGH CLEANLINESS FROM THE FIRE WASTE RELEASED IN COTTON GRINDING PLANTS

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Absract
In recent times, China, India, the Netherlands, Spain, France, the United States (southern states), where timber resources are rare and plant-rich and in Latin American countries, the technology of extracting pulp from the ginning industry and textile enterprises, as well as pulp from annual plants, is developing.

Keywords: cotton lint, ugar, ulyuk, polymerization rate, pentosan, alkali sediment, brittleness, ash content, moisture, cellulose, concentration, parameter, optimal conditions, destruction

Introduction

Cotton wool PM (lint) separated in ginneries Highly mixed -PU (lint) wastes of ginners and cotton short wool -PKM (fluff) has a higher purity than mixed waste synthesis of several brands of cellulose as well as the analysis of optimal conditions obtained as a result of studies on the effect of parameters.

The world's demand for organic substances and modified composite polymer materials based on them is growing day by day. At present, organic substances are used in various industries, including pharmaceuticals, perfumery, food, construction, oil and gas industry, mining, metallurgy, mining of precious ores, textiles and the share of products based on them as the main raw material is growing rapidly [1-12].

The large-scale use of cellulose and its simple and complex esters in the above-mentioned industries gives promising results. This, in turn, will lead to the production of modified composite polymer materials for these industries, which are export-oriented and import-substituting cellulose and organic substances based on it, simple and complex ethers and the creation of large innovative technologies for industrial-scale implementation and the application of positive results in production.

In recent times, China, India, the Netherlands, Spain, France, the United States (southern states), where timber resources are rare and plant-rich and in Latin American countries, the technology of extracting pulp from the ginning industry and textile enterprises, as well as pulp from annual plants, is developing. However, these technologies are somehow copying the technology of obtaining cellulose from wood with all its shortcomings. In view of the above, in this section we have managed to obtain several brands of high-purity cellulose based on PTKTCh (fiber pulp of textile enterprises). Research has been conducted on the chemical recycling of fibrous waste. These studies were mainly conducted on cotton wool-PM (lint), high-mixed-PU (ulyuk - gin motes) waste of cotton gins and short-wool-PKM (fluff) mixed waste of cotton.

Improving the productivity of cotton industry enterprises by processing cotton ginning waste into high-quality cotton cellulose, which is a raw material for the chemical, light and textile industries and improving its impact on the environment, the superiority of existing technologies in the process of cellulose extraction, as well as sulfate obtained on the basis of deciduous and coniferous trees and sulfide, bisulfide celluloses do not lag behind in physicochemical and mechanical properties. The technology also envisages the synthesis of cellulose products obtained on the basis of waste from ginneries into assortments in different areas. The technology, which is supposed to be based on the project, is simple and control of the modes in it with high accuracy according to the required quality indicators that is, by changing the concentration, time, temperature, the desired yield, the degree of polymerization and α-cellulose with a-cellulose, as well as simple esters of cellulose with high quality [13-25].

TABLE 1 The following are some of the indicators of PTKTCh (Fiber pulp of textile enterprises):

Types of PTKTCh	**Pollution rate, %**	**Cellulose content, %**	**Polymerization rate**	**Amount of ash, %**
PM (lint)	27,2	74,8	-	-
PU (ulyuk - gin motes)	34	52	-	-
Short cotton wool -PKM (fluff).	42	48	-	-

As can be seen from the table, PTKTCh (fiber pulp of textile enterprises) is considered to have a high level of pollution. The low amount of cellulose in it is characterized by the proportion of various additional impurities in the composition. In order to remove impurities from the fiber and increase the amount of cellulose, it is necessary to carry out enrichment processes. In this regard, several stages of the process have been carried out.

Initially, the fiber was cleaned of mechanical waste then a boiling process was carried out in various solutions of alkali (NaOH). The effects of different parameters on the fiber cooking process were studied in parallel. From such parameters, the alkali concentration, boiling time and boiling temperatures were studied [26-38]. The following are some qualitative indicators of the cellulose formed during chemical processing after mechanical cleaning of PTKTCs (fiber pulp of textile enterprises).

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Some qualitative indicators of cellulose formed during chemical processing of PTKTCh after mechanical treatment
(under the influence of alkali concentration)

TABLE 2

NaOH concentrat ion, g/l	Boiling time, min	Boiling tempera ture	Cellulose yield, %	a-cellulose, %	PD-degree polymerization	Amount of ash, %	Flexibility, %
Cotton wool-PM (lint)							
10	120	98-100	82	86,3	1550	1,7	70
20	120	98-100	91	93,1	1460	1,0	124
30	**120**	**98-100**	**94**	**97,7**	**1280**	**0,2**	**155**
40	120	98-100	96	97,6	1180	0,2	150
Ulyuk mixed -PU (ulyuk) waste							
10	120	98-100	72	86,3	720	2,5	90
20	**120**	**98-100**	**93**	**93,1**	**710**	**1,2**	**150**
30	120	98-100	94	95,7	510	0,6	152
40	120	98-100	93	97,2	470	0,3	150
Cotton short wool -PKM (fluff) mixed waste							
10	**120**	**98-100**	**94**	**92,8**	**770**	**0,7**	**90**
20	120	98-100	91	93,0	660	0,6	124
30	120	98-100	87	92,9	540	0,4	141
40	120	98-100	86	93,2	490	0,5	152

It can be seen from the table that some properties of cellulose formed under the influence of different alkali concentrations have different parameters, and based on the results of the study, the optimal value of alkali concentration for each of the PTKTCh (fiber pulp of textile enterprises) was determined. An increase in the concentration of alkali leads to the decomposition of the elementary links in the macro molecule that is, it leads to destruction. Conversely, it tends to increase the amount of α-cellulose. Accordingly, the concentration of NaOH was optimized for cotton wool-PM (lint) with a concentration of 30g / l, high-mixed -PU (ulyuk) for waste 20g/ l, and cotton short-wool -PKM (fluff) mixed waste with a concentration of 10 g/l. Accordingly, the concentration of NaOH was optimized for cotton wool-PM (lint) with a concentration of 30g / l, high-mixed -PU (ulyuk) for waste 20g / l, and cotton short-wool -PKM (fluff) mixed waste with a concentration of 10g / l. The time of alkaline boiling of the fibrous waste is studied below.

Some qualitative indicators (effect of boiling time) of cellulose formed during chemical processing after mechanical cleaning of PTKTCh.

TABLE 3

NaOH concentrati on, g/l	Boiling time, min	Boiling tempera ture	Cellulose yield, %	a-cellulose, %	PD-degree polymerization	Amount of ash, %	Flexibility, %
Cotton wool-PM (lint)							
30	60	98-100	82	86,3	1550	1,7	70
30	120	98-100	91	93,1	1460	1,0	124
30	**180**	**98-100**	**94**	**97,7**	**1280**	**0,2**	**155**
30	240	98-100	96	97,6	1180	0,2	150
Ulyuk mixed -PU (ulyuk) waste							
20	60	98-100	72	86,3	720	2,5	145
20	**120**	**98-100**	**93**	**93,1**	**710**	**1,2**	**150**
20	180	98-100	94	95,7	510	0,6	152
20	240	98-100	93	97,2	470	0,3	150
Cotton short wool -PKM (fluff) mixed waste							
10	**60**	**98-100**	**94**	**92,8**	**770**	**0,7**	**150**
10	120	98-100	91	93,0	660	0,6	152
10	180	98-100	87	92,9	540	0,4	155
10	240	98-100	86	93,2	490	0,5	150

It can be seen from the table that the effect of different boiling times on the process, some properties of the resulting cellulose have different parameters, and based on the results of the study, the optimal value of boiling time for each PTKTCh (fiber pulp of textile enterprises) was determined. The increase in boiling time caused a variety of destructive conditions, including a negative effect on the degree of polymerization of cellulose, while a positive effect on its ash content and degree of suffocation. Accordingly, the boiling time for cotton wool-PM (lint) is 180 minutes / boiling time for the mixed -PU (ulyuk) waste is 120 minutes / and for the short cotton wool -PKM (fluff) mixed waste / is the boiling time is 60 minutes, time concentrations were optimal.

References

1. M.M. Murodov. «Technology of making cellulose and its ethers by using raw materials» // International Conference "Renewable Wood and Plant Resources: Chemistry, Technology, Pharmacology, and Medicine". Saint-Petersburg, Russia. June 21-24., 2011. 142-143.
2. M.M. Murodov. «The technology of making carboxymethyl cellulose (cmc) by method monoapparatus» // International Conference «Renewable Wood and Plant Resources: Chemistry, Technology, Pharmacology, and Medicine». Saint-Petersburg, Russia. June 21-24., 2011. 141-142.
3. Ўзбекистон Республика Вазирлар Маҳкамаси "РЕСПУБЛИКАДА ТЕЗ ЎСУВЧИ ВА САНОАТБОП ПАВЛОВНИЯ ДАРАХТИ ПЛАНТАЦИЯЛАРИНИ БАРПО ҚИЛИШ ЧОРА-ТАДБИРЛАРИ ТЎҒРИСИДА" 2020 йил 27 августдаги 520-сонли қарори.
4. Интернет: https://xs.uz/uzkr/post/ hududlarda –pavlovniya -plantatsiyalari -tashkil-qilinadi/
5. Муродов, М. Х., & Муродов, Б. Х. У. (2015). Фотоэлектрическая станция с автоматическим управлением мощностью 20 кВт для учебного заведения. Science Time, (12 (24)), 543-547.
6. Murodov, M. M., Rahmanberdiev, G. R., Khalikov, M. M., Egamberdiev, E. A., Negmatova, K. C., Saidov, M. M., & Mahmudova, N. (2012, July). Endurance of high molecular weight carboxymethyl cellulose in corrosive environments. In AIP Conference Proceedings (Vol. 1459, No. 1, pp. 309-311). American Institute of Physics.
7. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. (2021). OBTAINING A PAC FROM THE CELLULOSE OF PLANTS OF SUNFLOWER, SAFFLOWER AND WASTE FROM THE TEXTILE INDUSTRY.
8. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. Obtaining a Pac From the Cellulose of Plants of Sunflower, Safflower and Waste From the Textile Industry. European Journal of Humanities and Educational Advancements, 2(1), 13-15.
9. Murodov, M. M., Xudoyarov, O. F., & Urozov, M. Q. (2018). Technology of making carboxymethylcellulose by using local raw materials. Advanced Engineering Forum Vols. 8-9 (2018) pp 411-412/©. Trans Tech Publications, Switzerland. doi, 10, 8-9.
10. Primqulov, M. T., Rahmonbtrdiev, G., Murodov, M. M., & Mirataev, A. A. (2014). Tarkibida sellyuloza saqlovchi xom ashyoni qayta ishlash texnologiyasi. Ozbekiston faylasuflar milliy jamiyati nashriyati. Toshkent, 28-29.
11. Рахманбердиев, Г. Р., & Муродов, М. М. (2011). Разработка технологии получения целлюлозы из растений топинамбура. Итисодиёт ва инновацион технологиялар" илмий электрон журнали,(2), 1-11.

12. Elievich, C. L., Khasanovich, Y. S., & Murodovich, M. M. (2021). TECHNOLOGY FOR THE PRODUCTION OF PAPER COMPOSITES FOR DIFFERENT AREAS FROM FIBER WASTE.
13. MURODOVICH, M. M., QULTURAEVICH, U. M., & MAHAMEDJANOVA, D. (2018). Development of Technology for Production of Cellulose From Plants of Tissue and Receiving Na-Carboxymethylcellulose On its Basis. JournalNX, 6(12), 407-411.
14. Rahmonberdiev, G., Murodov, M., Negmatova, K., Negmatov, S., & Lysenko, A. (2012). Effective Technology of Obtaining The Carboxymethyl Cellulose From Annual Plants. In Advanced Materials Research (Vol. 413, pp. 541-543). Trans Tech Publications Ltd.
15. Murodovich, M. M., Murodovich, H. M., & Qulturaevich, U. M. (2020). Obtaining technical carboxymethyl cellulose increased in main substance. ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL, 10(12), 717-719.
16. Murodovich, M. M., Qulturaevich, U. M., & Mahamedjanova, D. Comparative Researches of the Composition and Properties Cmc in Different Degree of Polymerization. JournalNX, 6(12), 412-415.
17. Йулдашева, Г. И., & Тешабаева, О. Н. (2020). Развитие цифровой экономики Республики Узбекистан. Universum: экономика и юриспруденция, (7 (72)), 4-6. [18] Teshabaeva, O., Yuldasheva, G., & Yuldasheva, M. (2021). DEVELOPMENT OF ELECTRONIC BUSINESS IN THE REPUBLIC OF UZBEKISTAN. Интернаука, (3-3), 16-18.
18. Ibragimovna, Y. G. (2022). ADVANTAGES OF CREDIT-MODULE SYSTEM IN THE FIELD OF EDUCATION. INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 7.429, 11, 14-16.
19. Йўлдашева, М. (2021). ЭФФЕКТИВНОЕ УПРАВЛЕНИЕ ИНВЕСТИЦИОННОЙ ДЕЯТЕЛЬНОСТЬЮ ИНФОРМАЦИОННО-КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ УЗБЕКИСТАНА. Студенческий вестник, (3-4), 11-13.
20. Shermatova, G. Y. H. (2022). ANIQ FANLARNI O'QITISHDA AXBOROT TEXNOLOGIYALARIDAN FOYDALANISH. Scientific progress, 3(1), 372-376.
21. Yuldasheva, G. I., & Shermatova, K. M. (2021). THE USE OF ADAPTIVE TECHNOLOGIES IN THE EDUCATIONAL PROCESS. Экономика и социум, (4-1), 466-468.
22. Худаёрова, С. И. (2022). ОСОБЕННОСТИ МОРФОЛОГИЧЕСКОГО ФОРМИРОВАНИЯ ЛИСТЬЕВ У СОРТОВ ЛИМОНА (CITRUS L.) В ЗАЩИЩЕННЫХ МЕСТАХ. БАРҚАРОРЛИК ВА ЕТАКЧИ ТАДҚИҚОТЛАР ОНЛАЙН ИЛМИЙ ЖУРНАЛИ, 15-18.
23. Қодирова, Г. О. Қ., & Худоёрова, Ф. (2021). РОЛЬ ОБРАЗОВАТЕЛЬНЫХ ТЕХНОЛОГИЙ В ПРЕПОДАВАНИИ ЯЗЫКА. Scientific progress, 2(3), 894-898.
24. Itolmasovna, K. S. (2022). DEVELOPMENT OF MARKETABLE PROPERTIES OF PROCESSED LEMON. The American Journal of Agriculture and Biomedical Engineering, 4(02), 21-25.
25. Хамидов, О. Р., & Кудратов, Ш. И. (2022, March). ИНТЕГРАЛЬНАЯ ОЦЕНКА ТЕХНИЧЕСКОГО СОСТОЯНИЯ СИСТЕМ ЭНЕРГЕТИЧЕСКИХ УСТАНОВОК ЛОКОМОТИВОВ. In " ONLINE-CONFERENCES" PLATFORM (pp. 165-168).
26. Грищенко, А. В., & Хамидов, О. Р. (2018). Оценка технического состояния локомотивных асинхронных тяговых электродвигателей с использованием нейронных сетей. Транспорт Российской Федерации. Журнал о науке, практике, экономике, (6 (79)), 19-22.

27. Сафаров, А. М., Жураева, К. К., & Рустемова, А. Р. (2020). ВОПРОСЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ЭНЕРГОРЕСУРСОВ. ИННОВАЦИОННОЕ РАЗВИТИЕ: ПОТЕНЦИАЛ НАУКИ И СОВРЕМЕННОГО ОБРАЗОВАНИЯ, 20-23.
28. Хамидов, О. Р., & Грищенко, А. В. (2013). Вибродиагностика повреждения подшипников качения локомотивных асинхронных электродвигателей. In Подвижной состав XXI века: идеи, требования, проекты (pp. 174-176).
29. Bedritsky, I. M., Jurayeva, K. K., & Bozorov, L. K. (2020). USING OF PARAMETRIC NONLINEAR LC-CIRCUITS IN STABILIZED TRANSDUCERS OF THE NUMBER OF PHASES. Chemical Technology, Control and Management, 2, 42-48.
30. Komilovna, J. K., & Rustemovna, R. A. (2020). The role of vacuum circuit breakers in traction substations. International Journal on Orange Technologies, 2(5), 1-2.
31. Qulturaevich, U. M., Elievich, C. L., Murodovich, M. M., & Fattahovna, Y. N. (2021, May). TECHNOLOGIES FOR PRODUCING CELLULOSE FROM SAFLOR PLANTS AND PRODUCING CARBOXYMETHYL CELLULOSE BASED ON IT. In Euro-Asia Conferences (Vol. 5, No. 1, pp. 1-4).
32. Qulturaevich, U. M., Elievich, C. L., Murodovich, M. M., & Uralovich, K. S. (2021, May). TECHNOLOGY OF PATS GETTING BY MONOAPPARAT. In Euro-Asia Conferences (Vol. 5, No. 1, pp. 5-7).
33. Murodovich, M. M., & Mahamedjanova, D. (2020). Technologies for producing cellulose from saflor plants and producing carboxymethyl cellulose based on. ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL, 10(12), 730-734.
34. Халиков, М. М., Рахманбердыев, Г. Р., Турабджанов, С. М., & Муродов, М. М. (2016). ИНГИБИРОВАНИЕ ДЕСТРУКЦИИ НАТРИЕВОЙ СОЛИ КАРБОКСИМЕТИЛЦЕЛЛЮЛОЗЫ В ПРОЦЕССЕ ЕЁ ПОЛУЧЕНИЯ. Химическая промышленность сегодня, (11), 22-26.
35. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. (2021). OBTAINING A PAC FROM THE CELLULOSE OF PLANTS OF SUNFLOWER, SAFFLOWER AND WASTE FROM THE TEXTILE INDUSTRY.
36. Turabovich, D. A., & Murodovich, M. M. Processing And Development Of Technology For Development Of Equipment For Sustainable Promotions For Maximum Communities. International Journal on Integrated Education, 3(12), 498-504.
37. Murodovich, M. M. Creation of Innovative Technology to Be Involved in Popular and Wine Tours (Marmar Popular, Another Bentonit and Maxali Homes). International Journal on Integrated Education, 3(12), 494-497.